## Project Summary:

Risk Assessment of Sn-plated Solder Terminals

DfR Solutions was asked to perform a risk assessment of tin whisker induced failure due to the presence of a Sn-plated solder terminal. After subjecting the solder terminal configuration to a thorough review of current technology on tin whiskers, DfR Solutions found that there is a low probability that the tin-plated solder terminal will experience a failure in its 20+ year lifetime. The matte tin plating over copper core was found to be unlikely to produce tin whiskers longer than 1 mm, which would therefore be unlikely to break off under vibration or shock and likely to buckle before penetrating the conformal coating. Through this assessment, the military and avionics manufacturer was able to proceed confidently in its use of these solder terminals, knowing that they the terminals would withstand the demands of a high reliability application.

Keywords: tin whisker, Sn-plated solder, operating environment, static contact, debris, electrical short, radiated emissions in high frequency applications, plating thickness, conformal coating, compressive stress, temperature cycling, temperature-humidity, matte tin, bright tin plating, sulfate, stannate, organic content, brightening agents, orientation, current, plasma arc, low resistance path, vibration, mechanical shock, mitigation, Pb, lead, copper core

5110 Roanoke Place, Suite 101 College Park, Maryland 20740
Phone (301) 474-0607 Fax (240) 757-0053
www.DfRSolutions.com